Stem cells and the niche: a dynamic duo.

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Public Summary:
This review provides a thorough overview of the role that local stem cell microenvironments (also called niches) play in regulating stem cell behavior. In addition, we review how niches have been identified and characterized and how technological advances have significantly improved our ability to investigate the relationship between stem cells and their niche. Lastly, we discuss how this relationship is altered as a consequence of aging, wound repair, and tumorigenesis.

Scientific Abstract:
Stem cell niches are dynamic microenvironments that balance stem cell activity to maintain tissue homeostasis and repair throughout the lifetime of an organism. The development of strategies to monitor and perturb niche components has provided insight into the responsive nature of the niche and offers a framework to uncover how disruption of normal stem cell niche function may contribute to aging and disease onset and progression. Additional work in the identification of genetic factors that regulate the formation, activity, and size of stem cell niches will facilitate incorporation of the niche into stem cell-based therapies and regenerative medicine.